

Unusual Injuries of the Hand: Impalement Injuries

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Abstract

Impalement injuries are relatively rare. The most common anatomical site of involvement is the extremities. Impalement injuries are defined as penetrating injuries where a traumatic agent remains impaled in the human body. Foreign body penetration of the hand and wrist is presented as emergency cases. Due to the rarity of such final impalement injuries presenting to the emergency, the management of this clinical condition remains controversial. Here, we report two cases of impalement injuries of the hand and their successful management. The patients even though been injured by such an object had minimum injuries, the chances of which are quite low. Case 1: A 27-year-old female presented with a history of accidental slipping in the staircase and sustained penetrating injury over the right hand by iron fence final 5 h before presentation. Case 2: A 42-year-old male presented with a history of slipping while trying to cross a fence. He sustained penetrating injury over his left hand by iron fence final 7 h before presentation.

Keywords: Final injuries, hand injuries, impalement injuries

INTRODUCTION

Impalement injuries are defined as a wound resulting from a foreign object penetrating the body of a patient. Impalement injuries are relatively rare.^[1] It enters through a puncture wound on the skin and can go up to variable depths.^[2] These types of injuries can be differentiated into Type I when a moving body strikes an immobile object and Type II where a mobile object strikes an immobile body.^[3] This impaled foreign body may be apparent on examination or may even go unnoticed due to its being embedded in its entirety.^[4]

Due to the rarity of such final impalement injuries presenting to the emergency, the management of this clinical condition remains controversial.

This article reports patients with impalement injuries of the hand and their management with a successful outcome.

CASE REPORTS

Case 1

A 27-year-old female presented with a history of accidental

slipping in the staircase and sustained a penetrating injury over the right hand by iron fence final 5 h before presentation. The spiked railing pierced the fourth web space from the volar aspect of the palm in the region of flexor zone three and came out from the dorsal aspect of the hand just proximal to the fourth web space. On clinical examination, there was no neurovascular deficit; movements of the ring and little fingers were restricted. Tetanus prophylaxis was given.

The patient was taken for exploration under the brachial block. The wound on the volar aspect was extended by lazy S incision, and then, spiked iron top was withdrawn taking utmost care without injuring surrounding structures. On exploration, all the structures were found to be intact with minimal ooze, so the wound was thoroughly lavaged with normal saline. Wounds

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over the dorsal and volar aspects were primarily sutured. The patient was under routine follow-up and was doing well without any functional deficit [Figure 1a-c].

Case 2

A 42-year-old male presented with a history of slipping while trying to cross a fence. He sustained a penetrating injury over his left hand by an iron fence finial 7 h before the presentation. The person was found hanging for 4 h till the rescuers managed to cut the fence finial. The spike of the railing pierced the distal forearm from the volar aspect and came out from the dorsal aspect. On clinical examination, there was no neurovascular deficit. There was a restriction of wrist and finger movements. Tetanus prophylaxis was given.

The patient was taken for exploration under the brachial block. Intraoperatively, there was an injury of the flexor digitorum superficialis muscle of the ring and little finger. The wound on the volar aspect was extended by a lazy S incision, and then, the spiked iron top was withdrawn. The wound was thoroughly lavaged with normal saline. The repair of the flexor digitorum superficialis tendon was done. The wound over the dorsal and volar aspects was primarily sutured. The patient was under routine follow-up and was doing well without any functional deficit [Figure 2a-c].

DISCUSSION

The ends of metal railings forming part of fences or gates may not have specific ends or may terminate in a decorative finial. Occasionally, the ends may have a sharp spear-shaped projection or have an attached finial also with a “spearhead” profile. The purpose of these sharp ends is to restrict unauthorized access to an area or yard.^[5]

Series of reports on impalement injuries have advised that the impaling object can be left *in situ* and reduced in size or length, which can allow the patient to be transported to a health facility.^[6] This measure aims to prevent severe life-threatening hemorrhage that may ensue if the tamponading effect by the impaling object on a large vessel is suddenly removed and also to avoid breakage of the impaling object.

A few cases with successful management of such types of injuries have been reported in the published literature. Management of this type of impalement injury requires great caution, beginning with leaving the foreign object *in situ* until it can be removed in a controlled environment of the operation theater, followed by timely transport to a tertiary care hospital and efficient surgical management.^[7]

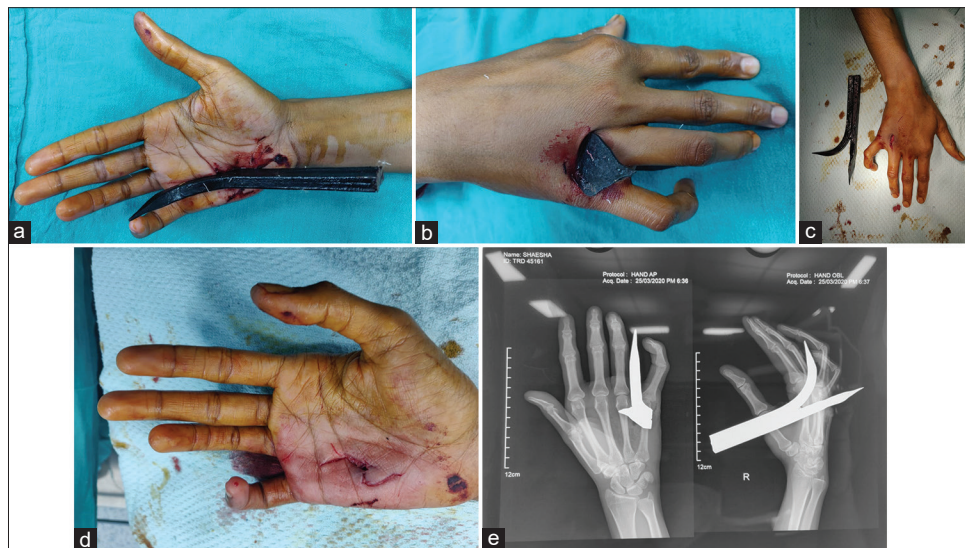


Figure 1: Case one, right hand impalement injury



Figure 2: Case two, left hand impalement injury

Impalement injuries are complex, penetrating injuries with several challenges in prehospital care, transportation, and surgical management. Healthcare specialists should be aware of this clinical entity and its challenges.^[8]

Full trauma evaluation and resuscitation should be carried out before attending to a local injury. Minimal manipulation of the foreign body along with extraction in operation theater under direct vision, wound debridement, and administration of antibiotics to prevent wound infection are pearls of the management of impalement injury.^[9]

Our patients did not suffer from any serious injuries, the odds of which are very low in this type of impalement with a foreign body in the hand. They proceeded on to have a full recovery, being in the prime of health on the latest follow-up in the department.

CONCLUSION

Such impalement injuries can cause severe damage. One must take the upmost care in managing such cases in the primary site and in the operation theater. In our case, the patients presented to our department had minimal injuries which were treated accordingly.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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